

The American Statistician

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News and notes should be sent to Dana Barbour, News Editor, American Statistical Association, 1757 K Street, N.W., Washington 6, D. C.

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Professional Standards Proposed for State and Municipal Statisticians

Another step was recently taken by the Institute of Mathematical Statistics' Committee on Professional Standards of Statisticians in Government Service in its effort to focus attention on the potentialities of modern statistical methods in Governmental operations and to obtain fuller recognition of the higher technical qualifications required of statisticians in virtue of the growth of statistical knowledge and technique in the last few decades. In a letter to State and Municipal governments, reproduced below, the Committee proposes a schedule (Schedule I) of duties for professional statisticians at various levels. To bring out the differences between practitioners of the newer analytical techniques and those conforming to the more popular conception of the statisticians, concerned with the mechanics of compiling and tabulation of large quantities of data, the letter also presents a schedule for "principal statistics clerk". The letter was prepared after a survey of Government statistical positions in the U.S. and Canada.

The proposals for professional standards at the State and Municipal level were preceded by similar and successful efforts in regard to Federal positions. In 1946, noting that the Federal Government employed many mathematical statisticians, but that explicit recognition of the profession was lacking, the Institute of Mathematical Statistics established the Committee on Professional Standards of Statisticians in Government Service as a standing committee under the Chairmanship of Dr. W. Edwards Deming, then with the Bureau of the Budget, to look after the interests of mathematical statistics (and mathematical statisticians) in the Federal Service. As a result of the work of this committee the new classification standards for statistical positions in the Federal Service, issued by the U.S. Civil Service Commission in June 1948, recognized three main categories of statisticians: mathematical statisticians, analytical statisticians, and survey statisticians. The new standards also distinguished the work of the professional statisticians from, on the one hand, that of the subject-matter specialist who employs statistical methods in pursuing the goals of his subject-matter speciality and, on the other hand, from that of non-professional statistical positions that are concerned mainly with the routine phases of field enumeration, recording, editing, and tabulation of statistical data.

In 1954 the IMS Committee, under the Chairmanship of Dr. Bradford F. Kimball of the New York Public Service Commission, turned its attention to the problems of recognition and effective utilization of statistics and statisticians in State and Municipal governments. The com-

munication below summarises the recommendations resulting from this latest phase of its activity:

October 26, 1956

Dear Sir:

Too often the statistical profession is regarded as a career involving only the gathering and tabulation of statistical data, without consideration of the analytical procedures which are required to give meaning and verity to the tabulation and the inferences to be drawn from them.

The change in the potential service that can be offered by a statistician because of the advance of knowledge over the last quarter century (for example in the principles of sampling and statistical inference, to mention only two fields) is very great.

For this reason the Committee on Professional Standards of Statisticians in Government Service of the Institute of Mathematical Statistics conducted a survey in 1954 of statistical positions in the states, the Dominion Bureau of Statistics of Canada, and the Federal Government in order to gain information concerning the type of position offered, and the qualifications required.

This survey disclosed that out of 40 state governments that reported on their statistical position one-half recognized that such positions required some college training in statistical theory, and one-third that there should be some emphasis on graduate training. The survey also seemed to indicate that while the states were low on salaries and qualifications, the salaries and qualifications were not particularly out of line for the job specifications set forth.

In view of the results of the survey the Committee has drawn up a schedule (see Schedule I) of the types of work that a professional statistician might perform, under the four job classification levels:

Entering and intermediate level
Independent Worker or Research Worker
Unit Supervisor or Research Specialist
Research Consultant

(Alongside the research consultant might be put the Director of the Statistical Unit, whose primary concern is the direction of the work as related to the needs and requirements of the Department).

It will be noted that beyond the entering and intermediate level, two classes are recognized at each level: (a) the statistician who is principally concerned with supervision and (b) the research statistician.

In order to point up the difference between statistical work of a non-professional nature and that which pertains to professional statisticians, the specifications which have been drawn up by one of the more heavily populated states for "principal statistics clerk" are set forth in Schedule II.

While the Committee realizes that the statistical work in some states and municipalities may not require the services of a professional statistician, it wishes to focus attention on the potentialities of such positions. For example, with increased knowledge of statistical theory and techniques a position which at first sight would merely seem to require techniques for collecting and processing statistical data (as indicated in Schedule II), might very well grow into a position where the incumbent was able to draw valuable conclusions from analysis of the data, which would (1) be of direct interest to the bureau and a wider audience, or (2) would bring about constructive changes in the processing methods of the unit involved.

With the increase in opportunities for training in statistical theory that are now available, the question of supply has become less critical. Rather, it is believed that if "a statistical series" of positions which offers a self-respecting career service be set up in the state or municipal service, based on adequate salary levels, there would be little difficulty in filling such positions.

SCHEDULE I

IMS Committee on Prof. Standards of Statisticians in Government Service—1955

DUTIES OF STATISTICIANS AT VARIOUS LEVELS

<i>Area of Application</i>	<i>Entering Level and Intermediate Level</i>	<i>Independent Worker or Research Worker</i>	<i>Unit Supervisor or Research Specialist</i>	<i>Research Consultant</i>
Formulating Problems		Assists in design of studies	Participates in the formulation of problems.	Participates with workers in applied fields in formulating problems.
Planning Statistical Aspects		Designs forms and questionnaires in participation with workers in applied field. Supervises collection of data.	Plans designs of studies in collaboration with other statisticians or with workers in applied fields.	Participates with workers in applied fields in the design of a study.
Collection of Data	Assists in the design of forms and questionnaires. Supervises collection of data.	Lays out procedures for tabulation. Designs punched cards. Assists in supervising tabulation.	Directs staff of unit and is responsible for quality and progress of work.	Advises workers in applied field in procedures for collection of data.
Preparation of Data		Assists in design and preparation of tables.	Directs staff of unit and is responsible for quality and progress of work.	Advises
Summarizing Data		Applies statistical procedures. Works directly from mathematical formulas.	Assists in formulation of procedures for analysis. Sets up computing methods.	Advises
Analysis for Discussion		Prepares tables and graphs for final reports. Writes sections of reports.	Prepares minor reports or sections of major reports.	Participates in preparation of reports at hearings to further interpret data or to explain the basis of conclusions drawn.
Reporting			Assists higher level statisticians in formulating recommendations.	Participates in preparation of reports and appears at hearings to further interpret data or to explain the basis of conclusions drawn.
Recommending			Formulates recommendation in association with higher level statisticians or other workers.	Makes recommendations.
Supervision	Supervises clerical staff in various phases of work described.	Supervises employees in the entering level and clerical staff.	Takes full responsibility for his unit.	
<i>Developing Methodology</i>				
Formulating Problems		Assists in formulating problems.	Participates in the formulation of problems.	
Investigation of Literature	Reads and summarizes specified articles.	Investigates total background of a problem.	Assigns subordinates to investigate background.	Suggests material to be investigated.
Development of New Methodology	Computes values for tables to facilitate application of new methods.	Solves or assists in solution of problems in methodology.	Solves problems in methodology.	Advises.
Publication	Assists in the preparation of manuscripts, by performing calculations and reading proof.	Assists in preparation of manuscripts.	Prepares manuscripts.	Reviews and prepares manuscripts.
<i>Association with Other Workers</i>		Attends professional meetings.	Attends and participates in professional meetings.	Attends and participates in professional meetings. Confers with workers in other fields and assists them in formulating their problems.

In view of the rapid advancement of statistical theory and technique over the last quarter century, it is believed by the Committee that personnel boards may require outside assistance in setting up qualifications and examinations for personnel which could adequately meet the enhanced potentialities of the statistical phases of governmental operations.

Accordingly this committee offers to furnish advice (to a limited extent) in setting up such qualifications, and examinations, particularly as they relate to needed theoretical background and advanced statistical theory. This advice would be free relative to giving a general statement of what sort of topics need to be covered. Also a panel of consultants will be on our reference list who are available for consultation on the details of setting up qualifications and examinations for such positions.

This letter is not sent to you in spirit of criticism of existing practices, but rather by way of calling attention to the rapid growth of the field of statistical "know-how" that has taken place in the last quarter century.

The Institute of Mathematical Statistics is a professional organization of statisticians whose avowed purpose is "to encourage the development, dissemination, and application of mathematical statistics". As a committee of this scientific organization, our concern, confirmed by the recent survey, is that certain large areas for valuable statistical work are not being developed to the extent that they might be.

It is believed that more attention given to establishing a series of career positions for adequately trained professional statisticians would in the long run be richly rewarded.

Very truly yours,
BRADFORD F. KIMBALL, Chairman
For the Committee:

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SCHEDULE II PRINCIPAL STATISTICS CLERK

DEFINITION

Has charge of a large office organization engaged in statistical clerical work or acts as-assistant to the administrative head of a statistics or research staff; does related work as required.

DISTINGUISHING FEATURES

This is highly difficult and responsible clerical work not only requiring a knowledge of statistical procedures but also involving supervisory and administrative responsibilities of a high order. The work may be mainly concerned with the preparation of statistics for immediate use, publication, or further study and in that case usually involves technical supervision of a large staff of statistics clerks. It may also include responsibility for the administrative activities of the unit with immediate oversight over the clerical and stenographic staff. The incumbent is subject to supervision from the administrative head of the organization. Technical assistance is available from professional statisticians for whom he acts as liaison with the clerical staff.

In the Collection of Statistical Data

EXAMPLES OF WORK

Develops form letters to be mailed with schedules and forms to reporting agencies for the collection of statistical data; super-

vises the mailing of schedules and reporting forms to reporting agencies; supervises the sending of second and third notices to delinquent reporters; assists statisticians in planning collection of data for studies.

In the Compilation and Presentation of Statistical Data

Aids and supervises a large staff of clerks and office machine operators in the compilation and tabulation of statistical and accounting data; sets up tables for their tabulations; assumes responsibility for the accuracy and completeness of the material; prepares material for special reports and assists statisticians in the conduct of special surveys; supervises the general office routine.

New ASA Representatives and Committee Chairmen

Harold Dorn, National Institutes of Health, U. S. Public Health Service, was elected ASA Representative to the Social Science Research Council by the Council of the American Statistical Association at its meeting on September 6 in Detroit.

Stuart A. Rice, a former president of the Association and head of Stuart Rice Associates, has been appointed ASA Representative on the Council of Population and Housing Census Users. This Council, which is described elsewhere in this issue, will act as an advisory body to the Bureau of the Census on plans for the 1960 Census. The Association had been requested to appoint a representative.

Charles B. Ratchford, N. C. Agricultural Extension Service, Raleigh, N. C., has been appointed a member of the Census Advisory Committee to succeed Frank J. Welch, who has resigned.

Edwin Goldfield, Bureau of the Census, has been designated as Chairman of the Committee on Data Sources, succeeding Frank Hanna. Mr. Hanna is currently serving as the representative from the Business and Economic Statistics Section on the Committee on Publications.

Contract With ICA

A contract has been signed between the American Statistical Association and the International Cooperation Administration. The purpose is to provide continuing professional follow-up in statistical fields for those who have received training in the U. S. from the I.C.A. or its predecessor agencies, to furnish U. S. technical literature for underdeveloped areas of the world, and to encourage and assist in developing professional statistical associations overseas. The ASA is to offer membership for a period of three years to foreign nationals designated by the I.C.A., supplying them with the same journals, reports and other services as are supplied to other members of the Association. It will answer replies to requests for information and advice on technical statistical questions and will assist in developing overseas professional associations similar to the ASA. The I.C.A. will contribute toward the membership fee for each member which it

sponsors. It is also appointing a representative to work with ASA in implementing the contract. This arrangement is similar to that being worked out by the I.C.A. with other professional societies.

National Research Council—National Bureau of Standards Postdoctoral Research Associateships

Research associateships, supported by the National Bureau of Standards and awarded on recommendations of the National Academy of Sciences—National Research Council, are offered to provide young investigators of unusual promise and ability the opportunity for basic research in various branches of the physical and mathematical sciences. These associateships are open only to citizens of the United States and are tenable at the National Bureau of Standards in Washington, D.C. Applicants must have the Ph.D. or Sc.D. degree, or their equivalent. The term of the appointment is for one calendar year, and the stipend is \$7,035.

The National Bureau of Standards agrees to provide the necessary facilities and equipment incident to the research of the associate. No specific services are required, and it is expected that the associate will devote essentially his full time to research in his field of interest. No commitment either on the part of the associate or the sponsor with regard to later employment is implied by the acceptance of an award. A candidate must present evidence that he will be accepted as an associate by the scientific adviser with whom he will study. The associateships will be civil service appointments, and applicants will be expected to conform to civil service requirements as to citizenship, health and security.

It is expected that approximately 10 awards may be made in a total of fourteen fields, of which the following are of particular interest to statisticians; Applied Mathematical Statistics, Numerical Analysis. Applications for the academic year 1957-58 must be submitted by January 9, 1957. For further information write to Fellowship Office, National Research Council, 2101 Constitution Avenue, Washington 25, D.C.

National Science Foundation Fellowships For 1957-1958

The National Science Foundation has announced its plans to award approximately 300 graduate and 175 postdoctoral fellowships for scientific study during the 1957-1958 academic year. These fellowships will be awarded to citizens of the United States, selected solely on the basis of ability. They are offered in the mathematical, physical, medical, biological, engineering, and other sciences including anthropology, psychology, geography, certain interdisciplinary fields, and fields of convergence between the natural and social sciences.

Graduate fellowships are available to those who are working toward the masters' or doctoral degrees in the first, intermediate or terminal year of graduate study. College seniors who expect to receive a baccalaureate degree during the 1956-1957 academic year are also eligible to apply. Postdoctoral fellowships are available to individuals who, as of the beginning of their fellowships, have a Ph.D. in one of the fields listed above or who have had research training and experience equivalent to that represented by such a degree. In addition, holders of the M.D., D.D.S., or D.V.M. degree, who wish to obtain further training for a career in research, are eligible provided they can present an acceptable plan of study and research.

All applicants for graduate (predoctoral) awards will be required to take an examination designed to test scientific aptitude and achievement. This examination, administered by the Educational Testing Service, will be given on January 19, 1957 at designated centers throughout the United States and certain foreign countries. The evaluation of each candidate's application is made by the appropriate Academy-Research Council selection panels and boards. The final selection of Fellows will be made by the National Science Foundation. Fellowship awards will be announced on March 15, 1957.

The annual stipends for graduate Fellows are as follows: \$1600 for the first year; \$1800 for the intermediate year; and \$2000 for the terminal year. The annual stipend for postdoctoral Fellows is \$3800. Dependency allowances will be made to married Fellows. Tuition, laboratory fees and limited travel allowances will also be provided.

Further information and application materials may be secured from the Fellowship Office, National Academy of Sciences-National Research Council, 2101 Constitution Avenue, N.W., Washington 25, D. C. The deadline for the receipt of applications for postdoctoral fellowships is December 24, 1956; for graduate fellowships January 7, 1957.

Postdoctoral Awards in Statistics at Chicago

Awards for study in statistics by persons whose primary field is not statistics but one of the physical, biological, or social sciences to which statistics can be applied are being offered by the Committee on Statistics of the University of Chicago. The awards range from \$3,600 to \$5,000 on the basis of an eleven month residence. The closing date for application for the academic year 1957-8 is February 15, 1957. Further information may be obtained from the Committee on Statistics, Eckhart Hall, University of Chicago, Chicago, 37, Illinois.

30th Session of ISI

The 30th Session of the International Statistical Institute will be held in Stockholm, August 8 to 15, 1957. Several joint meetings are scheduled with the Congress of the International Union for the Scientific Study of Population, which is meeting in Stockholm at the same time, and with other organizations. The provisional program is as follows:

- The theory and the practice of linear programming with special reference to the stochastic aspects. (organizer: R. Frisch, Norway).
- Survey techniques in population research (in particular non-sampling errors). (organizer: N. Keyfitz, Canada) (Joint meeting with the International Population Union)
- The use of electronic equipment in censuses of population and other fields. (organizer: H. Campion, United Kingdom)
- Statistical testing of national economic projections and programmes. (organizer: Tj.C. Koopmans, U.S.A.) (Joint meeting with the Nordic Statistics Conference)
- Statistics of regions within countries. (organizer: K., E. F. Wagner, Germany)
- Programming of the 1960 World Census of Agriculture. (organizer: P. V. Sukhatme, India)
- Statistics of transport, statistics of road safety and traffic congestion. (organizer: P. Depoid, France)
- Statistical methods in industry. (organized by: Committee on Statistics in Industry and Technology; Secretary: H. C. Hamaker)
- The application of statistics in small plants.
- The application of statistics in administrations.
- Statistics in municipal administration. (organized by: Committee on Statistics of Large Towns)
- The place of statistics in municipal administration. (organizer: P. de Wolff, Netherlands)
- Subject to be decided later. (organizer: B. Mewes, Germany)
- Measurement of fertility. (organizer: F. Lorimer, U.S.A.) (Joint meeting with the International Population Union)
- Joint meetings with the Biometric Society.
- Statistical genetics. (organizer: L. L. Cavalli-Sforza, Italy)
- Methods of sampling. (organizer: W. E. Deming, U.S.A.) (invited)
- Meetings for the discussion of contributed papers.

At each meeting not more than five papers will be presented and discussed. There will be two categories of papers—invited and contributed. Invited papers are those presented at the request of the organizers of meetings. Each organizer will invite not more than three authors to present an invited paper to his meeting. Contributed papers dealing with the subject of the meeting will be submitted to the organizer, who may add not more than two such papers to the program of the meeting. Such papers will then be considered as invited papers. Reports of I.S.I. committees will also be considered as invited papers. All other papers are contributed papers. Members of the Institute are entitled to submit one contributed paper, as are non-members who are invited to participate in the Session and who actually attend. The limit for contributed papers is 4,000 words. They should be submitted not later than May 1, 1957.

Additional information concerning the session may be obtained from Mr. E. Lunenberg, Director of the

Permanent Office of the International Statistical Institute, 2 Oostduinlaan, The Hague.

The National Science Foundation will award individual grants to defray partial travel expenses for a limited number of American scientists participating in the 30th Session of the I.S.I. or the Congress of the International Union for the Scientific Study of Population. Application blanks may be obtained from the National Science Foundation, Washington 25, D. C. Applications must be submitted by March 1, 1957.

N. Y. Chapter—AAAS Sessions

The New York Chapter of the ASA is sponsoring two sessions at the meeting of the American Association for the Advancement of Science in New York City from December 26 to 30. Both of these sessions, which are co-sponsored by AAAS Section K—Social and Economic Sciences, will be held at 2 p.m. on December 27. The subject of the first of these, which will meet in the Dallas Room of the Hotel Statler, is "Labor Mobility and Earnings." Dr. A. J. Jaffe, Bureau of Applied Social Research, Columbia University, arranged the session and Dr. Meredith B. Givens, Executive Director of the N. Y. State Incomes Study, will preside. Dr. Theresa R. Shapiro, Bureau of Applied Social Research, Columbia University, will present a paper on "The Relation of Earnings and Mobility in the Case of Ph.D. Scientists," and Dr. Maurice C. Benewitz, Department of Economics, C.C.N.Y., will speak on "Job Opportunities and Geographical Migration." Dr. Charles A. Pierce, Director of the Division of Research and Statistics, N. Y. State Department of Labor, is discussant.

The second session will meet in the First District Dental Society Room of the Hotel Statler, and is concerned with the subject "Statistics in Public Health." It was arranged by Carl L. Erhardt, Department of Health, City of New York, and will be presided over by George James, M.D., Deputy Commissioner, Department of Health, City of New York. Five papers will be presented as follows:

"Long-term Evaluation of Poliomyelitis Vaccine"—
Morris Greenberg, M.D., Department of Health,
City of New York

"Morbidity, Mortality and Industrial Retirement"—
J. S. Tyhurst, M.D., McGill University, Montreal
"Accident Morbidity Statistics in New York City"—
Harold Jacobziner, M.D., Dept. of Health, City
of New York

"Incidence and Prevalence Rates for Cancer of the
Cervix, Floyd County, Georgia"—Herbert Nie-
burgs, M.D., Beth-el Hospital, Brooklyn

"The Relationship of Syphilis to Cancer of the Cervix"—
Abraham Oppenheim, M.D., and Jules Vandow,
M.D., Dept. of Health, City of New York

Others of the AAAS sessions may be of interest to statisticians. These include "The Application of Digital Computers," sponsored by the AAAS Section A—Mathematics—and the Association for Computing Machinery, to be held in the Greeley Room of the Hotel Governor Clinton at 9 a.m., December 27; "The Impact of Natural Science on Social Science," sponsored by AAAS Section K, the National Academy of Economics and Political Science, and the American Political Science Association, and meeting in the West Room of the Hotel Statler at 8 p.m., December 26; and a five-session symposium on measurement meeting on December 29 and 30.

Copies of the General Program Directory may be obtained from the AAAS office, 1515 Mass. Avenue, N.W., Washington 5, D. C., at \$2 a copy.

Canadian Standards Association Committee on Sampling Procedures

A Committee on Sampling Procedures has been authorized by the Canadian Standards Association to guide technical committees and Canadian industry in providing for efficient sampling procedures in inspection and test specifications. Mr. J. B. Pringle, Bell Telephone Company of Canada, is chairman of the new Committee. Other members are: Dr. Brant Bonner, University of Western Ontario, London; T. S. Czarski, DND Inspection Services, Ottawa; A. P. Deacon, Quality Control Consultant, Brantford; E. L. Hartman, Hydro-Electric Power Commission of Ontario, Toronto; J. C. Knapp, Ford Motor Company of Canada Limited, Windsor; R. Lessard, Ecole Polytechnique, Montreal and B. H. Lloyd, Leetham, Simpson & Elliott Limited, Montreal.

The committee's terms of reference are: (1) to act in a consultative way with other committees on questions relating to sampling or quality control procedures, and advise regarding inclusion of such information in published matter; (2) to look into the broad question of the desirability of inclusion of sampling methods in descriptive specifications or the preparation of separate "inspection instructions"; and (3) to review the present situation in the United States with reference to those questions, as covered by the work of the American Standards Association and the American Society for Testing Materials committees, with a view to bringing Canadian standardization work into line.

Michigan State University Department of Statistics

The recently-formed Department of Statistics at Michigan State University is now tentatively organized. Following is the present staff roster; others may be added: Professors—W. D. Baten and Leo Katz; Associate Professors—K. J. Arnold and Ingram Olkin; Visiting Associate Professor—Gopinath Kallianpur, on leave from the Indian Statistical Institute at Calcutta;

Assistant Professors—J. F. Hannan, who will be on leave for 1956-57 at Stanford University, C. H. Kraft and A. G. Laurent; Visiting Assistant Professor—Morris Skibinsky, on leave from Purdue University; Instructors—C. H. Proctor and John Van Dyke. Professor Katz has been named Head of the Department.

Industrial Statistics Session at University of Oklahoma

A two-weeks course in Industrial Statistics was held at the University of Oklahoma, July 9-20, under the direction of R. L. Huntington, Research Professor of Chemical Engineering. Emphasis was placed on the application of statistics in the solution of refining and chemical processing problems, design of experiments, analysis of data, etc. The lecturers were Professor Gayle McElrath, University of Minnesota, Dr. D. J. Kaufman, Washington University, Professor Oscar Kempthorne, Iowa State, and Dr. John C. Brixey, University of Oklahoma. Members enrolling in the course were employees of oil and chemical companies and government agencies.

In view of the successful results of this first meeting to be held in the Southwest, plans are being made for a similar course next summer.

Summer Job Opportunities at the National Bureau of Standards

The Junior Scientist-Engineer program, open primarily to sophomores and juniors, is designed to prepare especially well qualified students majoring in the physical sciences, mathematics and engineering, for a future professional career at the National Bureau of Standards. Approximately 160 college students participate in this summer program each year with about 40 universities represented in this group. The program is a work-study plan. Students who meet program requirements are carried on a "leave without pay" status during the school year. With the exception of the GS-1 level, selections are made from Civil Service registers which are established as a result of the Student Trainee examination. This GS-1 group consists of selected high school graduates who have distinguished themselves in the physical sciences and engineering via the Westinghouse Science Talent Search or Science Honors on a national basis. The students participate in a planned program of orientation, carefully supervised on-the-job training assignments, and discussions with trainee advisors who are appointed from each technical division.

Students interested in this program should watch for the Civil Service Commission's Student Trainee examination announcement generally posted on college bulletin boards sometime during the fall or early winter.

FEDERAL STATISTICAL ACTIVITIES

1957 Census of Governments

The Bureau of the Census has under way a Census of Governments, which, by the terms of the authorizing law, is to provide statistics for the year 1957 regarding "taxes and tax valuations, governmental receipts, expenditures, indebtedness, and employment" of State and local governments.

General planning for the Census—development of specifications as to its scope, coverage, and timing—has been under way for more than a year. At an early stage, some 30 Federal agencies interested in State and local governments were canvassed for their views concerning subjects to be covered by the census and degree of detail suggested for tabular presentation. The Census Advisory Committee on State and Local Government Statistics is also being relied upon for advice, suggestions, and review. This continuing body is a rotating panel of leaders in the various non-Federal fields of interest in State and local government. It includes State and local officials, educators, businessmen, members of civic groups, and officers of professional and other State and local associations.

The 1957 Census of Governments will contain four major parts.

Listing of Governments

The first component of the Census, which is really in the nature of an essential preparatory operation, consists of the task of classifying and identifying all individual units of local government in the nation. This involves: (1) determining, by an analysis of constitutional and statutory provisions, types of local governments authorized to exist in each State; (2) preparing tentative listings of local governments, from Census records and by correspondence with State officials and certain Federal agencies; (3) field verification of these listings with the county clerk or other officials in each county; and (4) a mail check of names and addresses with the individual units. The first three of these operations were completed by October 1956, and the fourth will have been handled by early in 1957.

Preliminary findings from this part of the Census indicate that the number of local school districts has dropped considerably—from 67,000 in 1952 to less than 52,000 now—so that, despite some increase in other types of units, the total number of separate local governments in the Nation is at present apparently somewhat less than 105,000.

The product of this operation will be a classified count of governmental units in 1957 in each county and each State in the Nation, supported by a file of information concerning the name, type, address, and size of each such

governmental establishment. This file will provide the basis for mailing lists to be used in the collection of other types of Census data, and for published Census reports indicating numbers of local governments by State and county.

Public Employment

A second major component of the 1957 Census will supply statistics on governmental employment and payrolls. These data will relate to the month of April 1957, and will be collected and processed over a five-month period beginning in May 1957. Collection of employment statistics will be carried out by mail, using mailing lists developed in the identification and count of local governmental units.

All governmental units will be asked to furnish certain summary statistics on their employment. An extensive sample of governments will be asked to supply considerably more detailed information, including a distribution of full and part-time employment and payrolls by governmental function, distribution of full-time employment by rate of pay, information on employees and payrolls for force-account construction, information on number and basis of compensation of elected officials, and information on retirement coverage of their employees.

Employment data will be tabulated to provide summary statistics on government employment and payrolls for local governments in each county, with individual government figures shown for all units above a minimum size cutoff. More detailed statistics, based on reports received from the sample units, will be provided in the form of State-by-State estimates by type of government.

Governmental Finances

A third major component of the Census will embrace government financial statistics. As in the case of employment statistics, financial data will be collected by mail from the reporting universe of governments. The beginning of this phase of the Census must, of course, wait until the close of the 1957 fiscal years of the governments concerned. Most States and many local governments end their fiscal years on June 30. Collection of data for them will begin in the summer of 1957. Collection of data for governments closing their fiscal years in the latter half of 1957 will begin early in 1958.

Again, the information to be collected from most local governments will be relatively summary in nature, including figures on revenue by major source, expenditure by major function and by character, a few figures on outstanding debt, and a total for financial assets. A considerable sample of local governments will be asked to supply more detailed financial information, including a detailed

distribution of revenues, an expanded distribution of expenditures by function and character and object, a distribution of outstanding debt by type of debt, a breakdown of financial assets by purpose for which held and type of asset, and information on debt transactions.

The summary statistics collected from all governments will be tabulated to show county-by-county totals of governmental data and individual government statistics for units above a minimum-size cutoff. Detailed financial statistics will be presented in the form of State-by-State estimates of local government data by type of government.

Assessed Values and Assessment Ratios

The three components of the Census just described all represent types of data collection in which the Bureau of the Census has direct recent experience. These portions of the Census mainly represent a many-fold expansion of operations that are now conducted in miniature as parts of the current government statistics program. The fourth component, however, is not represented in the current reporting program of the Bureau and is therefore an area in which considerably more testing and other preliminary investigation has been required. This component involves data concerning property assessments and the relation of property values as assessed for taxation to current sales values of such properties.

Information has initially been gathered concerning the size and composition of real estate assessments for property taxation. The product of this undertaking will consist of Statewide figures and figures for the largest urban counties as to the distribution of the assessed value of taxable real estate by kind of property—farm, residential, commercial, industrial, vacant, etc.—and by size (in terms of assessed value) of individual parcels of property.

Data on assessed values have been obtained through a field operation involving the examination of local assessment records and the selection and classification of a sample of real property parcels in a sample of assessing jurisdiction in each state. The sample comprises about 1½% of the 63 million parcels of real property in the Nation.

A second phase of the property values component of the Census will involve analyzing actual sales of a sample of real properties in each of the States and developing Statewide and urban county ratios that reflect the average relationship of assessed value to sales value for taxable real property, as indicated by the sample transfers. It is hoped that such ratios can be developed for separate major classes or kinds of properties as well as for the aggregate of taxable real property.

The work on property assessments relates to assessments arrived at by local assessors in calendar 1956. The sales transactions analyzed will be for sales taking place in the 12-month period following the establishment of the 1956 assessment. Field work for compiling assessed

value information is now substantially completed. Collection of data on sales transactions will begin early in 1957.

—ROBERT F. DRURY, *Government Division,
Bureau of the Census, Department of
Commerce*

Advisory Groups for the 1960 Censuses of Population and Housing

The 18th Decennial Census of Population and Housing will be taken in April 1960. The Census Bureau is anxious that this major statistical undertaking of our Nation be carried out most effectively and efficiently, and especially, that the results be of maximum usefulness to the American people as a whole. To help attain these objectives, the Census Bureau is establishing a number of advisory groups. These groups will enable the Census Bureau to draw directly upon the advice and assistance of a large number of organizations, agencies, and individuals. The groups are being organized now, as the 1960 planning work gets under way, so that the Bureau can have the benefit of their recommendations and criticisms from the very first stages of program development.

The following advisory groups have been established:

Council of Population and Housing Census Users.—This group consists of representatives of about 65 professional and public organizations whose memberships include many consumers of Decennial Census statistics. Ralph J. Watkins, Director of Research of Dun and Bradstreet, is chairman. The representative from the American Statistical Association is Stuart A. Rice. The Council will probably meet twice a year for the next four years, and will focus its attention on broad policy matters rather than technical problems, give its reactions and suggestions, and offer any new ideas its members deem worthwhile.

Federal Agency Population and Housing Census Council.—This group was established by the Bureau of the Budget to provide an organized channel whereby Federal agency users of the census data may be kept informed on developments relating to the censuses and may make their needs known in planning for the censuses. Peyton Stapp, Assistant Chief of the Office of Statistical Standards, Bureau of the Budget, is chairman. More than 30 Federal agencies which make considerable use of Decennial Census materials have designated official representatives to the Council, and the Joint Economic Committee, Library of Congress and Inter American Statistical Institute are represented by observers.

Technical Advisory Committee for the Population Census.—This group consists of 19 individuals selected on the basis of their technical competence and experience, without regard to their organizational or agency affiliations. The groups, which will be concerned with the detailed technical problems of the Population Census pro-

gram, will meet several times a year for the next four or five years. The members of the committee are: Philip M. Hauser (chairman), University of Chicago; Donald J. Bogue, University of Chicago; Dorothy S. Brady, Bureau of Labor Statistics; John D. Durand, United Nations; John K. Folger, Southern Regional Education Board; Martin R. Gainsbrugh, National Industrial Conference Board; Maurice I. Gershenson, California Department of Industrial Relations; Harold Goldstein, Bureau of Labor Statistics; Robert D. Grove, National Office of Vital Statistics; Margaret Jarman Hagood, Department of Agriculture; Peter Henle, AFL-CIO; William Hodgkinson, Jr., American Telephone and Telegraph Company; Stanley Lebergott, Bureau of the Budget; Frank W. Notestein, Princeton University; Gladys L. Palmer, University of Pennsylvania; Calvin F. Schmid, University of Washington; Mortimer Spiegelman, Metropolitan Life Insurance Company; Dorothy Swaine Thomas, University of Pennsylvania; and P. K. Whelpton, Scripps Foundation for Research in Population Problems.

Technical Advisory Committee for the Housing Census.—This group is being organized along the same lines as the Population Technical Advisory Committee, except that the field of interest is in the Housing Census. The membership list of the group has not yet been completed, but will have as its nucleus the present Advisory Committee on Housing Statistics which consists of: Miles Colean (chairman), Consultant, Washington, D. C.; L. Durward Badgley, Mutual Life Insurance Company; Herb Breseman, Life Magazine; J. R. Dunkerley, American Bankers Association; Bay E. Estes, U. S. Steel Corporation; Ernest M. Fisher, Columbia University; Arthur S. Goldman, House and Home Magazine; Catherine Martini, National Association of Real Estate Boards; Hugh Mields, National Association of Housing and Redevelopment Officials; Nathan Rogg, National Association of Home Builders; Bert Seidman, AFL-CIO; William Slayton, Webb & Knapp, Inc.; George Smith, Jr., F. W. Dodge Corporation; James F. Steiner, Chamber of Commerce of the United States; and Arthur Weimer, University of Indiana.

In addition to these groups, the Census Advisory Committee of the American Statistical Association will be concerned with some phases of the 1960 Censuses as part of its review of all Census Bureau programs. Also, the Census Bureau has made special arrangements with a number of Federal agencies and private organizations (such as the Housing and Home Finance Agency, National Office of Vital Statistics, and Population Association of America) to work jointly on aspects of the Decennial Census of particular concern to them.

—DAVID L. KAPLAN, *Population Division,
Bureau of the Census, Department of
Commerce*

Expanded Statistical Program of Office of Education

Following action by the Congress in approving an appropriation of \$513,000 for the Research and Statistical Services Branch for fiscal year 1957 (an increase of \$315,000 over the 1956 budget), a sizeable expansion of the program and staff of this Branch is under way. New surveys being undertaken are described in the following paragraphs:

Survey of beginning public-school teachers.—A mail questionnaire is now being developed for a survey of beginning public-school teachers, to be conducted during the current school year. Initially, a sample of school districts will be canvassed with a request for lists of names and addresses of beginning teachers. On the basis of these listings, a national sample of beginning teachers will be developed, to whom the detailed questionnaire will be mailed. The main focus of the study will be on the economic status of the teacher, satisfaction with various aspects of teaching, and "career orientation," cross-classified with such characteristics as marital status, sex, race, teaching level, and size of school district. Pretesting of this survey will begin in November 1956.

Basic statistics of suburban city school systems.—This survey is to be conducted as a supplement to the 1955-56 survey of city school systems. For purposes of the survey, a suburban city is generally defined as a place of 10,000 population or more in a Standard Metropolitan Area, exclusive of the central city (or cities). The major objective of the study is to collect data of a qualitative nature in addition to the basic statistics on enrollment, staff, receipts, and expenditures. Information will be collected for such items as size of class, educational qualifications of teachers, experience of teachers, salary distribution, and special facilities, for suburban cities as well as for nonsuburban cities in the same city-size group. This survey has been pretested, and a revised form is being prepared for mailing this fall.

Basic statistics of rural school districts.—Planning is now in progress for the development of a program for collecting periodic statistics on rural school systems of a type comparable with those now available for city school systems. Efforts are being made to establish a "universe" of rural districts, to investigate types of data now being regularly gathered, and to develop questionnaires and procedures for collecting the required information.

Earned degrees conferred by higher educational institutions.—Although it is not new, the present survey, now under way for the school year 1955-56, is significantly expanded over those for previous years. The categories of major field of study have been expanded to the 3-digit level and the instructions for reporting degrees by field have been made more precise. The expansion of this

survey has been undertaken at the request of the National Science Foundation and other agencies interested in trained manpower.

—HERBERT S. CONRAD, *Director, Research and Statistical Services Branch, Office of Education, Department of Health, Education, and Welfare*

National Inventory of Soil and Water Conservation Needs

Under a directive from the Secretary dated April 10, 1956, the Department of Agriculture is developing a National Inventory of Soil and Water Conservation Needs. The Inventory is designed to supply more reliable information on soil and water resources to aid the Department in carrying out its responsibilities in soil and water conservation. The Soil Conservation Service has been given the leadership in making the Inventory, with the assistance of the Agricultural Conservation Program Service, Agricultural Research Service, Commodity Stabilization Service, Federal Extension Service, Farmers Home Administration, and the Forest Service.

The Inventory is to be made in each county in the United States and the Territories and will provide basic facts about the kind of soil, water and plant resources, as well as a realistic estimate of the treatments needed to best protect and improve these resources. All possible use will be made of soil survey data already available, but more will be collected to assure adequate soil and land use information for every county. The additional information will be obtained by making soil surveys of sample units selected by a statistical system of stratified random sampling.

The Statistical Laboratory at Iowa State College and the Biometrics Unit at Cornell University are presently under contract to provide scientific and uniform sampling procedures. Arrangements are being considered to have these laboratories later provide both routine and specialized tabulations or summaries of the assembled data as requested and as needed for State or county use.

The Inventory will be most useful in identifying and classifying the variety of conservation problems in terms of land treatment needs. It will also provide information regarding the conservation job that still remains to be done at the time of the Inventory. Another important use of the Inventory will be to serve the county for which it is prepared as a basis for sound planning for the conservation of soil and water resources. It will show the extent, location and limitations for agricultural use of all areas within the county. Many counties already use such data for equitable levying of farm land taxes. Other county and city officials use such data to substantiate zoning ordinances designed to serve county, municipal, industrial and private interests.

The Secretarial directive calls for initial completion of the Inventory within a period of three years. The completed Inventory will be kept current to reflect significant changes or trends in agriculture throughout the country.

—D. A. WILLIAMS, *Administrator, Soil Conservation Service, Department of Agriculture*

Survey of Durable Goods Replacement in Households

In January 1957 the Bureau of the Census will conduct a Survey of Durable Goods Replacement for the Household Economics Research Branch of the Agricultural Research Service, Department of Agriculture. This survey will be conducted as a supplement to the Current Population Survey. It is designed to provide information needed to facilitate estimates of the replacement rates for electric refrigerators, electric washing machines, and gas or electric ranges. The results, to be published in the form of service-life tables for household goods with one owner, will help the Household Economics Research Branch in its work in budget counseling, in meeting the needs of the rural development program for research findings on family living costs, and in estimating the value of household inventories that are prepared annually for the balance sheet of agriculture.

In one-half of the 35,000 households in the January 1957 Current Population Survey, the household head will be asked whether he owns a refrigerator, washing machine, and a range. For each of these items owners will be asked whether the equipment was new or used when purchased and in what year the purchase was made. For purchases made in 1956, the same questions will be asked concerning the piece of equipment which was replaced by the new purchase.

—JEAN L. PENNOCK, *Home Economist, Household Economics Research Branch, Agricultural Research Service, and*

—LEON R. PALEY, *Chief, Consumer Income Statistics Section, Economic Statistics Branch, Population Division, Bureau of the Census*

Data on Overtime Hours in Manufacturing Industries

The Bureau of Labor Statistics has started the regular publication of overtime hours in manufacturing industries. This information is issued in a monthly press release and also in the Bureau's monthly publication, "Employment and Earnings."

The data are collected from the regular sample of respondents reporting employment, payroll, and hours.

In addition to the statistics previously submitted, the more than 40,000 establishments in the manufacturing industries have reported their overtime hours for each month in 1956.

During the first seven months of 1956, the data were tabulated and tests of their validity and reasonableness were instituted at an industry and individual establishment level. A series of questions in the recently conducted Response Analysis Survey of manufacturing establishments tested the accuracy of response for a one percent probability sample of respondents. After the successful conclusion of these tests, the data were published.

The value of this new tool for economic analysis will, of course, be enhanced as data for successive years become available and the seasonal patterns inherent in the series for the different industries emerge more clearly. The data certainly throw additional light on the relationship between hours of work, earnings, and employment, and are a sensitive indicator of changes in these relationships, varying much more percentage-wise from month to month than the other basic series.

—DUDLEY E. YOUNG, *Assistant Chief for Statistics, Division of Manpower and Employment Statistics, Bureau of Labor Statistics, Department of Labor*

Proposed Program for 1958 Census of Transportation

A recommended program for a census of transportation was submitted to the Secretary of Commerce in a report issued on September 14. The report presents the results of the complete review of the need for and feasibility of Census Bureau activity in collecting transportation statistics, made by the Under Secretary for Transportation with the cooperation of the Assistant Secretary for Domestic Affairs and the Director of the Bureau of the Census. The review was initiated in April 1954 at the direction of the Secretary of Commerce, acting on the recommendation of the Intensive Review Committee which had appraised Census Bureau programs, under the chairmanship of Ralph J. Watkins.

The report concludes that comprehensive transportation statistics are essential for many public purposes, and recommends a Census Bureau program designed to bridge a number of serious gaps now existing in available data. The program proposed for the 1958 Census of Transportation consists of a series of interrelated surveys which, combined with data already available from other agencies, should provide greatly improved statistical coverage of transportation activities. The report also recommends continuation of necessary exploratory work in this field by the Census Bureau, designed to develop sound and efficient methods for collecting transportation data.

The five basic surveys proposed for the 1958 Census are:

1. *Survey of commodity distribution by land, air, and water transportation*, designed to obtain statistics by sampling sales invoices of major classes of shippers, showing the transportation and distribution of products by class of carrier, by market channel, distance from producer to market, and geographic areas.

2. *Survey of passenger travel by land, air, and water transportation*, designed to obtain information from a sample of households showing the volume and character of passenger travel by means of transport, by geographic area, and other related factors.

3. *Survey of truck transportation inventory and utilization*, designed to obtain statistics for a sample of trucks showing characteristics of the truck fleet and utilization of equipment in terms of tons carried, vehicle miles, and related factors.

4. *Survey of bus transportation inventory and utilization*, to obtain statistics for a sample of buses showing characteristics of the bus fleet and of the bus industry (employment, payrolls, revenues, etc.), to be collected from carriers which are not included in regularly published statistics.

5. *Survey of air cargo commodity movements*, to obtain statistics on international air cargo movements through a tabulation of import and export documents used by the Census Bureau to measure foreign trade, and to obtain statistics on domestic movements by sampling air freight bills on file at airline offices.

The Bureau of the Census is currently engaged in developing the specific forms and procedures to be used in the surveys. Each of the five surveys will utilize probability sampling procedures.

Copies of the report, entitled "Program for a Census of Transportation," may be purchased (price 50 cents) from the Department of Commerce, Washington 25, D. C., or from any of its Field Offices.

—DONALD E. CHURCH, *Chief, Transportation Division, Bureau of the Census, Department of Commerce*

Recent Publications

A number of recent publications by Federal agencies are described briefly below:

Statistical Abstract of the United States, 1956, issued by the Bureau of the Census. One-volume basic reference source issued annually, with more than 1,100 tables presenting data on economic, social and political subjects, selected from important governmental and private statistical publications. For the most part the data are national in scope, but more than 200 tables present statistics by States and some present figures for cities and metropolitan areas. Among 97 new tables in the 1956 issue are tables showing physical geography data; information from the 1954

Censuses of Agriculture, Business, and Manufactures; trends in church membership; expectation of life for white males and females, by States; projections to 1965 of elementary and high school enrollments, by grade; inventory of Federal real property; resources, expenditures and grants of philanthropic foundations; campaign expenditures for Congressional and Presidential elections; trend of mergers and acquisitions of firms; and medical care insurance. The volume includes brief text summations preceding each of the 34 separate subject sections, a 40-page detailed alphabetical subject index, and a 35-page bibliography of statistical sources. Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C., at \$3.75 a copy.

Health Costs of the Aged (Report No. 20), issued by the Social Security Administration, Department of Health, Education, and Welfare. Source book on the use of hospital and medical services and on health insurance and other methods of financing medical care among the aged, prepared by Division of Research and Statistics, Social Security Administration. Brings together data from a variety of sources pertinent to problems of providing older people with adequate medical care, such as: socio-economic characteristics of the aged population; indications of general health; hospital utilization; physicians' services; and medical costs, insurance ownership, and topics related to financing medical care. Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 65 cents a copy.

Job Performance and Age: A Study in Measurement (Bulletin No. 1203), issued by the Bureau of Labor Statistics. Results of a pilot study of age and on-the-job performance of production workers in selected manufacturing establishments. The study is part of the Department of Labor's comprehensive Older Worker Program, consisting of study and demonstration projects designed to overcome age barriers and discriminatory hiring practices and to increase job opportunities for older workers. It was designed to develop objective measures for comparing the job performance of workers in different age groups, and to provide a basis for more extensive work in this field. The report includes a detailed description of the techniques applied as well as the data obtained in four foot-wear plants and four plants manufacturing men's suits and coats, on output per man-hour, attendance, industrial injuries, and separation rates. Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 45 cents a copy.

Older Workers Under Collective Bargaining: Part I—Hiring, Retention, Job Termination (Bulletin 1199-1) and *Part II—Health and Insurance Plans, Pension Plans* (Bulletin 1199-2), issued by the Bureau of Labor Statistics. Two reports on the status of older workers under collective bargaining agreements, prepared as part of the Department of Labor's Older Worker Program. Part I deals with specific provisions relating to older workers, and is based on an analysis of virtually all collective bargaining agreements in the United States covering 1,000 or more workers of which BLS has record, exclusive of railroad and airline agreements. The 1,687 major agreements studied cover about 7.5 million workers. Part II is an examination of selected aspects of health and insurance and pension plans which are especially favorable or unfavorable to the older worker. It is based on an analysis of 300 major health and insurance plans under collective bargaining, covering nearly 5 million and 3 million workers, respectively. Both reports available from Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 25 cents for Part I and 25 cents for Part II.

Automatic Technology and Its Implications: A Selected Annotated Bibliography (Bulletin No. 1198), issued by the Bureau of Labor Statistics. Bibliography presenting some 360 references to articles, books, pamphlets, reports, etc., on automation and its effects. References are listed under 14 topics, such as automation in metalworking, automatic production of electronics, automatic control in processing, automatic control of machine tools, electronic computers, economic and social implications, union attitudes and policies, implications for business organization. Includes a brief note on contents of each reference, and indexes to authors, subjects and publishers. Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 45 cents a copy.

Revision of Consumer Credit Statistics, issued by the Board of Governors of the Federal Reserve System. Brief description, with the revised figures, of the revision of the Federal Reserve consumer credit series from 1948 to date, and the revision of seasonally adjusted estimates of extensions and repayments of installment credit from 1940 to date. The revision raises the estimate of total consumer credit outstanding as of December 31, 1955 by \$2.4 billion, or about 7 percent, with increases shown for all major types of both installment and noninstallment credit except automobile credit. Published in *Federal Reserve Bulletin*, October 1956; reprints available from Division of Administrative Services, Board of Governors of the Federal Reserve System, Washington 25, D. C.

STATISTICAL WORKS IN EARLY AMERICAN STATISTICS COURSES

PAUL J. FITZPATRICK

The Catholic University of America

This article aims to present information about statistical works used in teaching statistics in the United States of America before 1900. The data were obtained by examining more than 750 catalogues and annual reports of presidents of American colleges at the Library of Congress and other sources. A previous article had dealt with the nature and scope of the early teaching of statistics as revealed by the titles and contents of courses, names, professorial ranks, and degrees of the teachers, and the departments in which the courses were first offered. So far as is known to me, no one has ever presented any information about statistical works employed in statistics courses.

Since the University of Virginia was the first institution of higher learning in the United States to offer a course containing the word "statistics" in its title, we will begin our examination with this institution in order to ascertain what statistical works may have been employed.

The 1845-6 catalogue of The University of Virginia reported text-books as follows:

Text-Books—On Political Economy, (A. Smith) Say, (McCulloch,) Tucker and (Carey); on the Progress of Society, (Ferguson,) Guizot, (Taylor,) and (McKinnon). . . .

The examinations will be on the Professor's lectures and the text-books, that is, those books enumerated above, the names of which are not included in parentheses. Those so included are to be consulted, but are not required to be studied as text-books. (1)

The course, *Political Economy, Statistics, and Philosophy of Social Relations, or "Ethics of Society,"* was offered in 1845-46 by the Reverend William Holmes McGuffey, LL.D., who apparently felt that the course previously given by George Tucker (whom he had succeeded) contained so much statistical material that the word "statistics" belonged in the title of the course. This view is shared by authorities at The University of Virginia. There is also reason to believe that Tucker used his own well-known statistical work, *Progress of the United States in Population and Wealth in Fifty Years* (1843) published by Cary and Hart of Philadelphia, Frank Taylor of Washington, D. C. and Little and Brown of Boston. This volume of 211 pages, embracing twenty-one chapters, had previously been published in instalments by the press of Hunt's *Merchants' Magazine*, from July 1842 to December 1843 (volumes VII, VIII, and IX). Tucker states in the preface:

The writer of the following pages being desirous of further gratifying the curiosity he had always felt

on the subject of the census of the United States, was induced to make a thorough analysis of it from 1790 to 1840.

The result of his inquiries decided him on giving them to the public . . . Both in his estimates and speculations the writer has studied brevity, as he wished to make his little work a sort of hand book to the legislator, the statesman, and to all who are conversans [sic] with political arithmetic.

Freeman Hunt, nationally-known editor and publisher of *Merchants' Magazine*, one of the most outstanding periodicals of its day, stated that the foregoing volume "should be in the hands of every statesman and political economist in the country". (2)

Some are inclined to regard this work of Tucker as probably our first American statistics text. While it obviously did not deal with statistical tools such as averages, dispersion, correlation, and the like, it did undertake to explain various aspects of population statistics which at the time was one of our most important types of statistical data. Professor Willcox of Cornell stated that this work was "the most important American book on statistics to appear in the first half of the nineteenth century." He also added that Tucker "displayed remarkable insight in utilizing scanty census materials." (3)

After his retirement from the University of Virginia in 1845, Tucker continued to manifest much interest in statistics. As one example, he advocated in an article in December 1847 the formation of "A General Statistical Society for the United States" which would attempt in a select manner the collection of comprehensive statistical data relating to all phases of our society. In short, he concluded:

We have thus seen that accurate statistical knowledge makes us acquainted with everything which concerns a nation's greatness, or morals, or happiness; and that it affords us the only materials for settling all doubtful questions of national policy, as it brings them to a test of actual experience. (4)

Furthermore, at the first meeting of the American Association for the Advancement of Science in Philadelphia, in September 1848, a letter from Tucker was read proposing that statistics and political economy be set up as a Section. This letter read in part:

I have been long desirous of seeing a General Statistical Society in the United States, and last year invited, through *Hunt's Magazine* [sic], a meeting in this city for that purpose. The plan was very favorably responded to by some; but their number was not sufficient to justify the immediate formation of

such a society. It was then suggested, that all the purpose of such a society might be attained by a Section of this Association, appropriated to statistics and political economy . . . I accordingly beg leave to submit the following resolution:

Resolved, That a further Section of Statistics and Political Economy be added to those already established in this Institution. (5)

However, the association decided to include only political economy under one of the two main sections, that of Natural History which also embraced "geology, physiology, and medicine." Statistics was not considered even though there was a second section, Mathematics and Physics which included "general physics, mathematics, chemistry, civil engineering, and the applied sciences generally." (6)

It may be of some interest to note that Thomas Jefferson while planning the establishment of a university which was to become The University of Virginia, solicited the advice of Thomas Cooper, M.D., an outstanding scholar, as to the proposed curriculum. Dorfman reports that Cooper replied to the effect:

In the senior year there should be lectures, among other things, on the theory of general politics and government, with students taught first of all from Aristotle's excellent book; and then would come "political economy and statistics." (7)

Cooper taught political economy at the College of South Carolina when he was unable to teach at The University of Virginia because of violent opposition. On Jefferson's strong recommendation, Cooper, later the author of several works on political economy, had been appointed to The University of Virginia in 1819, the year the institution was formally established. Because of the aforementioned opposition, which even delayed the opening of the university, Cooper was compelled to resign. He went to the College of South Carolina where he became its president a year later. The university authorities of South Carolina consulted on the possibility of a statistics text having been used there were unable to locate any such information. Furthermore, they were unable to indicate whether Cooper actually gave any instruction in statistics while teaching political economy.

Since the University of Louisiana, now Tulane University, attempted to offer statistical instruction under De Bow in 1848-49 but failed, we do have a very comprehensive list of titles prepared by De Bow for his "Chair of Commerce, Public Economy, and Statistics". (It may be noted that on the title page of his famous *Review* during the years 1848 and 1849 his position is given slightly differently as that of "Professor of Political Economy, Commerce, and Statistics.") This recommendation, entitled "Library of the Chair of Public Economy, Commerce, and Statistics," was divided into three broad categories: Economics; Commerce; and

Agriculture, Manufactures, Internal Improvements, and Statistics, etc., etc." Under Economics, forty-five works are recommended for purchase; under Commerce, ninety-five; and under Agriculture, Manufactures, Internal Improvements, and Statistics, etc., etc., sixty-four works. Under the third heading we find such works as Petty's *Essays on Political Arithmetic*; McCulloch's *Statistical Account of British Empire*; Tucker's *Progress of the United States in Population and Wealth*; Morgan's *Treatise on Life Insurance*; Edmond's *Tables on Life Insurance*; Morgan's *Essays on Probabilities Applied To Life Insurance*; and Hawkin's *Elements of Medical Statistics*. (8) However, the publishers, the dates and the authors' initials were not given.

De Bow was highly regarded for his statistical knowledge and work. Francis A. Walker, Superintendent of both the 1870 and the 1880 federal censuses, considered De Bow as "one of the most meritorious of the earlier generation of American statisticians." (9)

Unfortunately, the authorities at Yale are unable to furnish information about any text which Francis A. Walker might have used in his course on *Public Finance: Statistics of Industry* which he taught from 1873 to 1881. However, in later years, catalogues reported under the description of courses that Irving Fisher, Ph.D., an Assistant Professor of Political Economy, used Mayo-Smith's *Statistics and Sociology* in three years 1896-99 in his course entitled *Statistics*. (10) Furthermore, in 1899-1900 William B. Bailey, Ph. D., Instructor in Statistics, took over Fisher's course and continued to use Mayo-Smith's work.

The five institutions which started courses in statistics during the 1830's were unable to furnish the writer any information about the text-books used. On the other hand, since the 127-page monograph of Professor Mayo-Smith entitled *Statistics and Economics* was issued as one of the publications of the American Economic Association, (Volume III, Numbers 4 and 5; September and November 1883, combined as one issue) it is probable that Mayo-Smith may have used it in his classes.

This work, a narrative account, does not deal with the descriptive statistical measures commonly used today. The author states in the preface:

The following monograph is neither a handbook of statistics, nor a textbook of statistical science. It does not pretend to give full data on any subject, or to discuss all the questions of statistical method and procedure. It is merely an attempt to put, briefly, into English that conception of statistics which regards them not merely as information but principally as contributions to the building of a social science. (11)

The titles of four chapters reveal that this work closely followed the description of his course, *Statistical Science: Methods and Results* as given in the 1884

Handbook of Information of Columbia College. (12) These chapter titles are:

- I. The Statistical Method Contrasted with the Historical and Comparative Methods in the Study of Social Science.
- II. An Outline of Statistics
 - Part 1. The Statistics of Population
 - Part 2. Economic Statistics
 - Part 3. The Statistics of Vice and Crime.
- III. Statistical Method or Statistical Science?
- IV. The Freedom of the Will.

Henry C. Adams, Ph.D., himself an outstanding statistician and economist, reviewing this volume wrote:

It is a scholarly piece of work, concise in statement, and clear in classification. Indeed, its particular merit is that, unlike most guides to study, its classifications are a help and not a hindrance . . .

This monograph will be of marked assistance to those in our colleges or universities who are giving instruction on statistics. It will serve well as a handbook for students to follow in connection with a course of lectures upon the subject. (13)

This monograph, therefore, appears to be the second American statistics textbook for class use during the nineteenth century even though the author, in his preface, disclaimed the intention of writing a textbook. In the late 1890's Mayo-Smith probably used in his teaching his later publications bearing the broad title "Science of Statistics": Volume I, *Statistics and Sociology*, (Macmillan, 1895), consisting of 399 pages, and Volume II, *Statistics and Economics*, (Macmillan, 1899), numbering 467 pages.

It is desirable to indicate that Mayo-Smith in the preface of his 1888 monograph calls attention to Pidgin's works, *Practical Statistics*, and another volume by Pidgin then under preparation, "History of Statistics which is promised next year." However, the latter volume was never published. The former volume, dedicated to the Honorable Carroll D. Wright, consisting of 201 pages, has as a subtitle "A Handbook for the Use of the Statistician at Work, Students in Colleges and Academies, Agents, Census Enumerators, etc." Its chapters covered:

- I. The Preparation of Schedules
- II. The Collection of Information
- III. Instruction to Enumerators and Agents
- IV. The Examination of Returns
- V. Tabulation
- VI. The Presentation of Results
- VII. Working and Illustrative Diagrams
- VIII. Applied Statistics
- IX. Some Special Features in Statistics
- X. The Teaching of Practical Statistics

Professor Mayo-Smith, reviewing this work, pointed out:

The author . . . is perhaps the best practical statistician in America. He is the inventor of numerous

arithmetical and calculating machines and devices for saving labor . . . The two volumes of the Massachusetts Census of 1885 which have been published give ample evidence of his skill and the comprehensive value of his methods. This volume gives the results of his experience and a full view of interior workings of what is undoubtedly the best statistical office in America and which is probably not excelled in Europe. . . . It cannot fail to be of the utmost value to the heads of our statistical bureaus and to statisticians of our board of trade . . . who so often enter on their work without the slightest knowledge of statistical methods . . . It should be read by every student of statistical science, by every teacher of political economy or of any of the social sciences where statistics are used. (14)

Pidgin at that time was Chief Clerk of the Massachusetts Bureau of Statistics and later its fourth Director (1903-1907). The second Director had been Carroll D. Wright from 1873 to 1888, when he became Commissioner of Labor of the United States. This bureau, the most outstanding bureau of statistics in the United States and highly regarded by European statisticians, was well known for its annual reports. As Gettymy, the fifth Director, stated, "The reports were in constant demand. They received European notice and favorable comments, and were used as textbooks in the colleges, which were now taking up the study of sociology and the relation of statistical science to economic questions." (15)

Since Mayo-Smith reviewed from time to time a number of annual reports of the bureaus of statistics of various states it is probable that he required his students to be familiar with them. (16)

No reason can be found why Pidgin did not publish his proposed work, *History of Statistics*, which was to contain the following informative chapters:

- I. The Origin of Statistics
- II. The Growth of Statistics
- III. The Present Condition of Statistics
- IV. The Future Development of Statistics
- V. The Statistical Offices and Societies of the World (with Addresses)
- VI. The Statisticians of the World (with Biographies and Portraits)
- VII. Summary of the Statistical Work of the World
- VIII. Catalogue of Official and Private Statistical Works and Papers
- IX. Statistical Subjects, Methods, etc. (17)

Pidgin in 1896 published another volume, *An Index to Occupations* with the subtitle "for use in Census Work and Statistical Tabulations," a volume of 300 pages. (18)

At the University of Pennsylvania it is likely that Dr. Roland P. Falkner used in one of his statistics courses his 243-page translation of Professor August Meitzen's famous work, *Geschichte, Theorie, und Technik der Statistik* (Berlin, 1886), which was published as two separate supplements (March and May 1891) in the *Annals*

of the American Academy of Political and Social Science, bearing the title, *History, Theory, and Technique of Statistics*. The translator pointed out in the introduction:

In presenting to the English public a work like the present, a word of explanation seems in order. Professor Meitzen's work, "Geschichte, Theorie, und Technik der Statistik," represents the most complete statement of theoretical statistics, in the smallest compass, in the German language. Its translation therefore has appeared desirable as well on account of its form as its matter. In regard to form, the work covers systematically the whole field of statistical theory, and thus furnishes the student an insight into the relation of the parts not to be gained by a consideration of special problems. (19)

The 1894-95 catalogue of The University of Pennsylvania reported a course bearing the title *History of Statistics*. (20) In 1895-96 this course was not listed, but in 1896-97 it was restored with the title *History and Theory of Statistics*. (21) It was repeated in 1897-98 and 1898-99. In 1899-1900 the title was again changed to *Statistical History, Theory, and Practice*. (22) At no time was a description of the course given. This *History of Statistics* course was one of the several statistics courses offered by Falkner in the Department of Philosophy (graduate division) and is not to be confused with his regular course, #9. *Statistics*, offered in the Wharton School.

This translation of Meitzen's work was used by a number of schools as a textbook as revealed by their designations in the course descriptions.

The writer has been unable to unearth any information as to possible texts used at the Graduate School of Johns Hopkins University and the University of Michigan. It is possible that students taking *Statistics of the United States and Graphic Methods* at the Massachusetts Institute of Technology were required to read Dewey's 12-page article entitled "Elementary Notes on Graphic Statistics" which embraced definition and various uses, history, and method of graphics. (23) Dewey described the practices followed by world famous economists and statisticians, such as Block, Haushofer, Lavausseur, Longstaff, Marshall, Mayr, Meitzen, and Francis A. Walker, relative to the purposes and various forms of charts and graphs.

No information about textbooks used during the 1890's could be obtained from Brown University, The Catholic University of America, The University of Chicago, Columbian College, now George Washington University, The University of Illinois, Harvard University, The University of Kansas, The State University of Iowa or from other sources. For eight other institutions it has been possible to gather the following data:

The 1893-94 catalogue of The University of Indiana reported that John R. Commons, in his course, *Eco-*

nomics and Statistics, used three non-statistical works, namely Ely's *Outlines of Economics*, George's *Progress and Plenty* and Gunston's *Wealth and Progress*. (24) For the period of the nineties no other information about texts at this institution is available.

The 1892-93 register of Leland Stanford University reported in its description of the course, *Theory and Techniques of Statistics*, that Dr. Frederick C. Clark used "Smith and Meitzen" (25) which would seem to point to Mayo-Smith's *Statistics and Economics*, 1888 edition, and either the German edition (1886) of Professor August Meitzen's work or Falkner's translation of it. No other information about texts for this decade is available.

The 1895-96 calendar of Wellesley College indicated that Professor Katharine Coman in her course *Statistical Study of Certain Economic Problems* relied on a variety of materials as the description of her course suggests:

The graphic method of presenting statistical results is emphasized. No single authority can be recommended. The United States Census, the Census of Massachusetts, the statistical reports of the Treasury Department, the reports of the National and State Labor Bureau, furnish the statistical data. (26)

This description is repeated for three successive years.

The 1891-92 catalogue of The University of Wisconsin reported in the course description that "a careful study of Meitzen's *The History, Theory, and Technique of Statistics*, and of Mayo-Smith's *Statistics and Economics* will be required." (27) The latter is Mayo-Smith's 1888 edition. The course, *Statistics* was taught by Professor Scott. No other text information is available for the decade.

Cornell University reported that Mayo-Smith's *Statistics and Economics* (1888 edition) was used.

The 1897-98 catalogue of Dartmouth College revealed that Professor Wells used two texts in his course, *Statistics*. They were Mayo-Smith's *Statistics and Sociology* and Wines' *Punishment and Crime*. (28)

The University of California reported regarding Professor Plehn's course, *Statistics*, in 1895-96 that:

The texts were R. Mayo-Smith's *Statistics and Sociology*, and *Immigration and Emigration*. Supplementary reading and work material were provided by the census reports of the United States (numbers I-II), of Prussia (1890) and of Massachusetts and Rhode Island (1885), by reports of the American Statistical Association, and by reports of the United States, California, and Massachusetts labor bureaus.

The University of Minnesota reported that Professor William W. Folwell, in his graduate course, *The Science of Statistics*, used his own 97-page manual entitled *Lecture Notes for an Elementary Course in Statistics, 1900-1907*. It carried no imprint of place or date. This work, which contains a 20-page informative bibliography, can be examined at the university archives.

Another aspect of the possible use of statistical teach-

ing aids relates to the activities of the statistical laboratory at Columbia College under the direction of Professor Mayo-Smith. This statistical laboratory is believed to have been the only one operating at any American institution prior to 1900. Mention of a statistical laboratory first appears in the "general statement" of the School of Political Science in the 1894-95 catalogue, but the laboratory is not listed among the "order of studies." Nor is it listed in subsequent catalogues covering the years, 1895-1901. Yet, information relative to this laboratory first appeared in the Ninth Annual Report of the President of Columbia for the year ending June 30, 1898. This laboratory, listed as statistical laboratory and seminar, is reported to have met for two hours fortnightly for the years, 1897-1901.

Its activities for 1897-1898 involving five members were described as:

The students were engaged in the first half-year in the analysis of the Statistics of Population contained in the volume on Population in the Eleventh Census of the United States. During the second half-year special studies were made of the Statistics of Occupations and Wages, and papers were read. (29)

Its activities for 1898-1899 involving twelve members were:

The students were engaged during the first half-year in practical exercises in the analysis of statistics, with special attention to the theory of probabilities, averages, mean error, etc. During the second half-year, some special reports on the Statistics of pauperism and Poor Relief were written. . . . As a practical piece of work, the students of the Seminar tabulated and analyzed the returns on about one thousand cards furnished by the Charity Organization Society, in regard to cases of distress occasioned by lack of employment. (30)

Its activities for 1899-1900 involving eight members were:

The students were engaged during the first half-year in practical exercises analyzing the population of the United States, according to race, nationality, sex, age, conjugal condition, immigration and occupation. Special studies were made and the results presented in the Seminar. During the second half-year, the same students engaged in exercises in the theory of probabilities, averages, mean error, and the mathematical theory of statistics. As a practical piece of work, the students of the Seminar analyzed the figures of the Charity Organization Society for the last ten years. (31)

It appears that statistical instruction in the nineteenth century in the United States was primarily concerned with finding proper means for accurate collection, classification, and presentation of quantitative data, the correct use of tables and charts, and the true interpretation of results of the investigation. Being citizens of a new nation, our statistical pioneers were blazing a trail, at times rather slowly, through the wilderness of

imperfect statistical data. (32) Moreover, new statistical methods such as the proper construction of questionnaires and the correct presentation of statistical tables and charts had to be improvised and perfected. Considerable work had to be done with respect to statistical reporting such as the definition of important statistical units, uniformity and comparability of data, and so on. Furthermore, misuses of statistical data were studied. As one example, the course *Statistics*, taught in 1896-97 by Professor Irving Fisher may be cited. Its description was:

An elementary course of the use and abuse of statistics. The sources and reliability of statistical data are discussed, and the methods of distinguishing true and false inferences are pointed out. (33)

The United States had no permanent federal bureau of the census until 1902. Prior to that year the census organization was set up every ten years and then dismantled after the completion of census reports. Indeed, the first nine censuses were taken by the United States judicial marshals under the direction of the Secretary of State or some other government official. Our pioneering statisticians realized only too well the exacting problem of accurate collection and proper presentation of statistical data.

After 1900, American statisticians began to devote more attention to the use of statistical tools such as averages, measures of dispersion and skewness, correlation coefficients, and other techniques for the purpose of extracting meaning from a mass of quantitative data. These methods of statistical analyses were considerably stimulated by the writings of such famous English scholars as Sir Francis Galton, Karl Pearson, G. Udny Yule, and others, and still more by the publication of Arthur L. Bowley's *Elements of Statistics* (328 pages) in 1901 by King and Son of London. Our first American text to devote considerable attention to these new statistical tools was Willford I. King's *The Elements of Statistical Methods* (250 pages) in 1912 by Macmillan of New York, although certain other American texts such as Charles B. Davenport's *Statistical Methods with Special Reference to Biological Variation* (148 pages) in 1899 by Wiley and Sons of New York, and William B. Bailey's *Modern Social Conditions* (377 pages) in 1906 by Century had already begun to employ some of these statistical tools. Bowley was then a Lecturer in Statistics at the London School of Economics and Political Science, King was an Instructor in Statistics at the University of Wisconsin, Davenport was an Instructor in Zoology at Harvard University and Bailey was an Assistant Professor of Political Economy at Yale University. Attention should be called to another volume, *The Principles of Breeding* (A Treatise on Thremmatology) by Eugene Davenport, Professor of Thremmatology at the University of Illinois, published in 1907 by Ginn and Company. This

727-page work employed around 100 pages explaining the application of statistical methods to the problems of livestock breeding and also an appendix of 32 pages explaining elementary principles underlying certain statistical measures. The latter section was written by Dr. Henry L. Reitz, Assistant Professor of Mathematics at the University of Illinois. At that time Davenport was Dean of the College of Agriculture and Director of the Agricultural Experimental Station.

These writings illustrate two trends which were to become characteristic of twentieth-century statistics: the growing application of statistics in the natural sciences, and the transformation of statistics from "political arithmetic", that is, the quantitative description of social phenomena, to a highly specialized technique of universal applicability. Within the short span of half a century, the age of Tucker, the versatile polymath, was gone, and that of the mathematical statisticians, such as Pearson, Bowley, and others had begun.

REFERENCES

- (1) Catalogue of The University of Virginia, 1845-6 p. 23.
- (2) Hunt's *Merchants' Magazine*, December 1843, Volume IX, footnote p. 509.
- (3) Willcox, Walter F. *Studies in American Demography*, 1940, Cornell University Press, p. 144; p. xiii.
- (4) "A General Statistical Society for the United States," Hunt's *Merchants' Magazine*, December 1847, volume XVII, p. 576.
- (5) Proceedings of the American Association for the Advancement of Science, volume I, 1848, pp. 134-135.
- (6) Dorfman, Joseph, *The Economic Mind in American Civilization*, volume II, The Viking Press, 1946, p. 888.
- (7) Dorfman, *op. cit.*, p. 534.
- (8) *The Commercial Review of the South and West*, March 1848, volume V, p. 243.
- (9) "Our Population in 1900," *The Atlantic Monthly*, October 1873, Volume 32, p. 489.
- (10) Catalogue of Yale College, 1896-97, p. 62; 1897-98, p. 65; 1898-99, p. 65.
- (11) Mayo-Smith, Richmond, *Statistics and Economics* (1888) p. 5.
- (12) 1884 Handbook of Information of Columbia College, p. 198.
- (13) Publications of the American Statistical Association, March 1889, New Series, volume I, pp. 218-219.
- (14) *Political Science Quarterly*, September 1888, volume III, pp. 547-548.
- (15) Gettely, Charles F., *The Massachusetts Bureau of Statistics, 1869-1915*, 1915. Boston, Wright & Potter Printing Co., p. 13.
- (16) *Political Science Quarterly*, June 1886 Volume I, p. 336 and September 1886, Volume I, p. 516.
- (17) Pidgin, Charles F., *Practical Statistics*, 1888 The William E. Smythe Co., Boston, copyright page.
- (18) Wright & Potter Printing Co.
- (19) Falkner, Roland P., translator, Meitzen's *History, Theory, and Technique of Statistics*, p. 3.
- (20) 1894-95 Catalogue and Announcements, p. 177.
- (21) 1896-97 Catalogue and Announcements, p. 191.
- (22) 1899-1900 Catalogue and Announcements, p. 226.
- (23) Dewey, Davis R., *Technology Quarterly*, volume II, No. 1, October 1888, pp. 89-100.
- (24) 1893-94 Catalogue, p. 55.
- (25) 1892-93 Register, p. 70.
- (26) 1895-96 Calendar, p. 56.
- (27) 1891-92 Catalogue, p. 94.
- (28) 1897-98 Catalogue, p. 85.
- (29) Ninth Annual Report of the President, p. 184.
- (30) Tenth Annual Report of the President, p. 187.
- (31) Eleventh Annual Report of the President, p. 183.
- (32) Wright, Carroll D., "The Limitations and Difficulties of Statistics," *Yale Review*, August 1894, pp. 121-143.
- (33) Catalogue of Yale College, 1896-97, p. 62.

PAPERS INVITED FOR ANNUAL MEETING

The Program Committee is anxious to have any suggestions or papers members may care to submit for the annual meeting of the American Statistical Association to be held in Atlantic City, September 10-13, 1957. Titles and abstracts of contributed papers should be submitted not later than February 10, 1957. Abstracts should not exceed 200 words. The Program Committee also urges that any suggestions or requests for sessions be sent in before February 10. Abstracts of papers and suggestions for sessions may be sent either to the Chairman of the Program Committee—Arnold J. King, President, National Analysts, Inc., 1015 Chestnut Street, Philadelphia 7, Pa. or to the appropriate section representative on the Program Committee:

Biometric Section:

Clyde Y. Kramer
Department of Statistics
Virginia Polytechnic
Institute
Blacksburg, Virginia

Business and Economic Statistics Section:

Louis Paradiso
Room 3850
Department of Commerce
Building
Washington 25, D. C.

Section on Physical and Engineering Sciences:

William Horton
Westinghouse Electric
Corporation
Pittsburgh, Penna.

Social Statistics Section:

Walt R. Simmons
U. S. Bureau of
Labor Statistics
Washington 25, D. C.

Training Section:

Boyd Harshbarger, Director
Statistical Laboratory
Virginia Polytechnic
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Blacksburg, Virginia

QUESTIONS AND ANSWERS

Edited by ERNEST RUBIN
*U. S. Department of Commerce
and American University*

Traffic Deaths on Holidays¹

Several times during the year the National Safety Council predicts the number of traffic deaths that will occur on a forthcoming holiday. The estimated number of deaths is shocking and the mournful verification when the holiday tolls are in does not lessen the impact. The purpose of the following discussion is to examine the pattern of holiday traffic fatalities in the decade 1946-1955.²

Data in Table 1 give traffic deaths on five selected national holidays during the ten-year period 1946 through 1955 inclusive. It will be noted that these holidays covered 140 exposure days, during which time 16,417 traffic deaths

¹ For related discussions in this column see "Problems in Accident Data," by Libert Ehrman (February, 1955), and "Statistical Problems of a Special Case," by John H. Smith (June, 1955).

² Mrs. Alma F. Eckart, a former student of mine at American University, obtained data from the National Safety Council on traffic deaths for selected holidays, 1946-1955. Her project, based on available data, was to consider whether the number of traffic deaths in the three-day holiday sequence Friday, Saturday and Sunday differed significantly from those of Saturday, Sunday and Monday.

were recorded. The daily average for each year, based on these particular holidays, increased from 75 deaths in 1946 to 145 deaths in 1955, a rise of 93 percent. In 1955 motor vehicle registrations, excluding public use vehicles, amounted to 62 million registrations compared to 34 million in 1946, i.e., motor vehicle registrations increased by 82 percent in the first postwar decade.

Variations during the ten-year period of the daily averages by particular holidays are also of interest because of the wide range of fatalities, i.e., a daily average for Memorial Day (May 30) holidays of 39 deaths compared with a daily average of 165 deaths for Christmas holidays. The mortality on selected holidays reflect, in part, the seasonality of nature as well as the seasonality of man's creation. The variations in the weather between January and December, throughout the entire country, are, of course, considerable. In addition to the provision of daylight-saving time, there are a variety of special behavior patterns connected with the various holidays.

Memorial Day holiday, for example, is frequently a

TABLE 1. *Traffic Mortality^a in the United States on Selected Holidays: 1946-1955*

Year	New Year's Day January 1	Memorial Day May 30	Independence Day July 4	Labor Day Sept. ^d	Christmas Day Dec. 25	Total Deaths	Days Covered	Daily Average
1946	93 ^b	159 ^c	231 ^c	246	253 ^b	982	13	75
1947	110 ^b	228 ^d	255 ^d	293	179 ^b	1,065	11	97
1948	207 ^c	204 ^d	296 ^d	293	277 ^c	1,277	13	98
1949	269 ^d	253 ^d	296 ^d	410	413 ^d	1,641	15	109
1950	304 ^d	347 ^e	491 ^e	389	545 ^d	2,076	17	122
1951	375 ^e	81 ^b	105 ^b	461	535 ^e	1,557	13	120
1952	407 ^e	363 ^d	366 ^d	432	556 ^e	2,124	17	125
1953	317 ^d	241 ^e	261 ^e	405	523 ^d	1,747	13	134
1954	296 ^c	362 ^d	348 ^d	364	392 ^c	1,762	13	135
1955	364 ^d	368 ^d	407 ^d	438	609 ^d	2,186	15	145
Total	2,742	2,606	3,056	3,731	4,282	16,417	140	117
Days covered	26	29	29	30	26	140	—	—
Daily average	105	89	105	124	165	117	—	—

^a Immediate traffic deaths only; these data do not include deaths resulting from traffic accidents.

^b 1 day holiday.

^c 2 day holiday.

^d 3 day holiday.

^e 4 day holiday.

Source: Adapted from data made available by courtesy of the National Safety Council.

try-out period for a pre-summer vacation. Thus many people will drive to country resorts at that time if the weather is nice. Labor Day (the first Monday in September) is usually the last week-end of summer vacations. The return of children from camps as well as adults from vacation resorts at this time creates excessive road congestion and motoring difficulties. Christmas is another holiday that creates vast migrations, including many college students who are returning home for the traditional vacation. Simultaneously with the increase in traffic, children in the elementary and high schools are released from school, the two factors operating jointly to create greater exposure risk.

It is somewhat surprising to find (in our data) that while Christmas traffic mortality is, on the average, the highest, that of New Year's is comparatively low, that is, 165 (average deaths) compared to 105. Perhaps the high rate during the Christmas holidays has a sobering effect a week later, at New Year.

In Table 2 the data have been rearranged, showing the number of deaths by duration of the holiday sequences. The average daily mortality is highest for the one- and two-day holiday periods. The frequencies or sub-samples are, however, quite small, i.e., only 6 in each case of one- and two-day holidays and only 3 cases for a four-day holiday.

Accident risk, generally, is a function of many variables

TABLE 2. *Traffic Deaths by Duration of Holiday: 1946-1955*

(1) Duration of Holiday	(2) Frequency of Duration	Total Days		(4) Total Deaths Reported	(5) Daily Average (4 : 3)
		(3) =	(1) \times (2)		
1 day	6	6		821	137
2 days	6	12		1,674	139
3 days	30	90		10,821	120
4 days	8	32		3,101	97
Total	50	140		16,417	117

Source: Adapted from data made available by courtesy of the National Safety Council.

and the determination of accident risk at holiday periods is even more complex. General accident risk is a function of such factors as population, car population, average daily usage or miles covered by motor vehicles. Some of the factors which operate, in general, to decrease accidents are better vehicles (brakes, signals), improved roads (including lighting and signals), regular automotive inspection every six months and safety programs.

Additional data should be obtained and intensive study given to the subject of traffic deaths during holiday sequences. The types of problems in this field require for solution, in addition to statistical analysis and preparation, the combined efforts of talent in the physical and social sciences.

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NEWS ABOUT MEMBERS

Richard P. Ament is now an instructor in Mathematics, Wooster College, Ohio.

Max Astrachan of the Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio, spent the summer on temporary duty with The RAND Corporation, Santa Monica, California.

R. L. Basmann has returned from a year's postdoctoral study (Fulbright grant) University of Oslo, Norway, to accept an assistant professorship in the Department of Economics, Northwestern University.

Geoffrey Beall is now engaged in problems of designing experiments in production of Gillette Safety Razor products and in analyzing the results.

Allan Birnbaum has been appointed Visiting Lecturer in Mathematics at Imperial College of Science and Technology (University of London) for the year 1956-57.

Donald J. Bogue of the University of Chicago has been appointed as a consultant to the Office of Statistical Standards of the U. S. Bureau of the Budget, to work on problems connected with the 1960 Census.

Edgar F. Borgatta has been appointed Professor of Sociology in the Graduate School of Arts and Science, New York University. He will be released by the University to continue as Associate Social Psychologist at Russell Sage Foundation on a part time basis.

Raymond H. Burros is now employed as an operations research analyst by Technical Operations, Inc., and is stationed at the Combat Operations Research Group, Headquarters Continental Army Command, Fort Monroe, Virginia.

Glenn L. Burrows, formerly Statistical Consultant with the Agricultural Marketing Service, Washington, D. C., is now Staff Statistician, Knolls Atomic Power Laboratory, Schenectady, New York.

Norman M. Chansky is continuing his duties as Director of Remedial Reading at Adelphi College, Garden City, New York.

Richard Cook, formerly Assistant Director of Market Research with Meldrum and Fewsmith Advertising Agency in Cleveland, has now joined Young & Rubicam, New York, as Research Account Executive.

Edward F. Denison, formerly Assistant Director of the Office of Business Economics, Department of Commerce, has resigned to join the staff of the Committee for Economic Development.

Louis S. Drake, formerly Professor of Economics at the Michigan College of Mining and Technology, is now Staff Assistant in Economic Forecasting at Calumet & Hecla, Inc., Chicago.

Maurice Eisenstein has been separated from the U. S. Army, where he served in the Scientific and Professional program as a mathematical statistician at Picatinny Arsenal, and is now on the staff of the Research and Development Division of

the AVCO Mfg. Corp. in Lawrence, Massachusetts.

Robert F. Fagot has accepted a position as Assistant Professor of Psychology at the University of Oregon, Eugene, Oregon. **James P. George** has accepted the position of Professor of Economics and Business Statistics, and Head, Department of Economics and Statistics, at the Iowa Wesleyan College.

David G. Gosslee obtained his Ph.D. degree in Experimental Statistics at North Carolina State College in August and is now employed by the North Dakota Agricultural College as Station Statistician.

Earl L. Green, Professor of Zoology at the Ohio State University, was appointed as Director of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, effective October 1, 1956, succeeding Dr. C. C. Little, founder and first Director.

Myron Greenwald, formerly Assistant Head of the Civilian Ceilings Branch, has been appointed Head of the Manpower Branch, Office of the Comptroller, Department of the Navy.

James E. Grizzle was separated from the Army on October 1 and has an assistantship in the Experimental Statistics Department at North Carolina State College.

John S. Helmick has transferred from Program Coordination Director in the Princeton Office to Director of the Los Angeles Office of Educational Testing Service.

Francis P. Hoeber is Manager of Program Analysis, and is engaged in short and long-range programming of basic research and product development at the Research Center for the Borg-Warner Corporation.

Daniel G. Horvitz, formerly Associate Professor of the Department of Experimental Statistics, North Carolina State College, has joined A. J. Wood & Company as Statistical Director. In his new assignment, Dr. Horvitz will supervise the statistical and sampling operations of the marketing research organization.

George Horwich has been appointed Assistant Professor of Economics at Purdue University. He was formerly at the National Bureau of Economic Research.

Robert D. Hughes received his M.S. degree at the University of Wyoming in June and is now employed as Statistical Analyst for Whirlpool-Seeger Corp., Marion Division, Marion, Ohio.

William C. James has been transferred from Caracas, Venezuela, to San Salvador, El Salvador. His work is that of technical advisor in Vital and Public Health Statistics under the program of the United States Operations Mission to El Salvador.

Helen R. Jeter, most recently with the Russell Sage Foundation where she completed an appraisal of the statistical work of New York City governmental departments, has been appointed Chief of the

Child Welfare Statistics Section, Division of Research, Children's Bureau, Social Security Administration.

Rhoda L. Karp has changed her position and is now employed as Assistant Statistician by the New York City Department of Health. Her work is under the jurisdiction of the Bureau of Tuberculosis.

Howard Laitin has been appointed Director of the Departments of Research and Statistics of Michael Saphier Associates and S.U.A. Inc., both of New York. Formerly he engaged in hospital planning for the Hospital Council of Greater New York and in cancer research under an American Cancer Society Institutional grant at Harvard.

Lois C. Lawrence's new position is that of Research Psychologist, Systems Operator Research Unit, Lackland Field Unit No. 1, AFP TRC, Lackland Air Force Base, San Antonio.

Eugene H. Lehman, Jr., Assistant Professor of Statistics at the University of Florida, has been transferred from the Economics to the Mathematics Department to teach Mathematical Statistics, Statistical Quality Control, and Calculus of Finite Differences, as well as some lower division sections.

Ronald H. Lewis graduated from Boston University in August with a major in Statistics and has accepted a position as Statistician and Associate Engineer at Northrop Aircraft, Inc., in Hawthorne, California. He is working at present in the Weapons Systems Analysis Dept.

Julius Lieblein, formerly with the Statistical Engineering Laboratory of the National Bureau of Standards, has transferred to the Applied Mathematics Laboratory of the David Taylor Model Basin, Department of the Navy, as Mathematical Statistician.

M. O. Locks has recently been appointed Research Operations Advisor in the Remington Rand UNIVAC Division of the Sperry Rand Corporation.

Arthur A. Lumsdaine, formerly at Chanute Air Force Base, Illinois, is now Chief of the Flight Systems Branch of the Maintenance Laboratory, Air Force Personnel and Training Research Center, at Lowry Air Force Base, Denver, Colorado.

George F. Lunger has resigned his position as Senior Analyst on the Ford Motor Company Quality Control Staff to accept a position as a mathematician in the Advanced Applications Section of the UNIVAC Division of Sperry Rand Corporation located at St. Paul, Minnesota.

R. Daniel Malone has been given the supervision of Science Research Associates—Scoring and Statistical Services Center in McHenry, Illinois. In addition to test scoring, special statistical reports are prepared from test results.

Jacob Marschak has now taken up his duties at Yale University as Professor of Economics and as Research Associate of

the Cowles Foundation for Research in Economics. He has been on a year's leave of absence at the Center for Advanced Studies in Behavioral Sciences.

Ethelyne L. McBee has left her position as Statistical Consultant, University of Florida, and is now employed as Associate Professor of Mathematics and Head of the Department at Wesleyan College, Macon, Georgia.

Paul W. McCracken is on a temporary leave of absence from the University of Michigan for work with the Council of Economic Advisers in Washington, D. C.

Richard B. McHugh is a Visiting Lecturer in the Biostatistics Division, Medical College, University of Minnesota, during 1956-57, on leave from his position as Associate Professor of Psychology and Statistics at Iowa State College.

Jay Merrill has recently joined the Statistical Methods Section of General Electric's General Engineering Laboratory in Schenectady. The position involves consulting on engineering and administrative problems.

Samuel Messick has accepted a joint appointment as an Associate in Personality Research at the Educational Testing Service and as Visiting Lecturer in Psychology at Princeton University.

Albert Mindlin has been appointed Technical Assistant to the Chief of the Statistics Branch, Bureau of Old-Age and Survivors Insurance, U. S. Department of Health, Education and Welfare.

Paul D. Minton has returned to the Department of Mathematics at Southern Methodist University after completing a one-year appointment on a research project at the Department of Statistics of Virginia Polytechnic Institute.

Stewart F. Mitchell, formerly Secretary-Treasurer of the North Texas Chapter, transferred from the Dallas to the Chicago Regional Office of Allstate Insurance Company. He has assumed the duties of Branch Planning Manager.

Charles N. Moore has returned to the University of Alabama to resume duties as Assistant Professor of Business Statistics after being on leave for a year to do research with the U. S. Air Force, Wright-Patterson AFB, Ohio, on application of electronic data processing equipment to inventory control.

Clinton L. Oaks has recently been appointed Assistant Professor of Business Statistics at the Graduate School of Business, Stanford University.

Bernard Ostle, Professor of Mathematics

at Montana State College, has been appointed Director of the recently formed Statistical Laboratory.

Charles F. Pinzka is now Instructor in Mathematics and Statistics at Xavier University, Cincinnati, Ohio.

Lowell J. Reed retired from the presidency of The Johns Hopkins University on October 1, 1956, being succeeded by Dr. Milton S. Eisenhower. Dr. Reed's future address will be Shelburne, New Hampshire.

William A. Reynolds has resigned as of November 1 as Assistant Director of Research for Fletcher D. Richards, Inc., advertising, to assume the position of Director of Studies for Datas, the research organization of Corpa, an advertising agency in Caracas, Venezuela, which is affiliated with Coleman, Prentis & Varley, Ltd., of London.

Luis Rose-Ugarte has been transferred to become FAO Regional Statistician for the Near East.

Willard N. Runquist is now Research Associate in Psychology at the State University of Iowa.

John M. Ryan has resigned his position as Mathematical Economist with the United Gas Corporation in order to accept the position of Director of Data Processing Services in the Datices Corporation, Fort Worth, Texas.

Norman B. Ryder has resigned his position as Demographer at the Scripps Foundation for Research in Population Problems, Miami University, Oxford, Ohio, and has accepted an appointment as Assistant Professor, Department of Sociology and Anthropology, University of Wisconsin, with special reference to research and teaching in Demography.

Philip Sagi has a new position at the University of Alabama as Assistant Professor. He will be teaching social statistics and research methods in the Department of Sociology.

George L. Saiger is a member of the professional staff, Department of Biostatistics, Columbia University, School of Public Health, and is consultant in medical research, Physics Division, RAND Corporation, Santa Monica, California.

Robert L. Sammons, formerly Chief of the Division of Statistics of the Puerto Rico Planning Board, has joined the staff of the Division of International Finance, Board of Governors of the Federal Reserve System, as Chief of the Latin American Section.

Roberto Sasso's new position is that of Professor of Statistics, Universidad de Costa Rica.

Louis Shere, formerly with the Council of Economic Advisers, has returned to his position at the University of Indiana.

Hanan C. Selvin is now Assistant Professor of Sociology and Social Institutions at the University of California in Berkeley.

Jack Silber has returned to the Department of Mathematics, Roosevelt University, after spending the Spring and Summer Semesters as Consultant to the Assistant for Operations Analysis, United States Air Force.

M. J. Slonim has been appointed Assistant for Mathematical Statistics in the Directorate of Statistical Services, Headquarters, U. S. Air Force. Formerly he served as Assistant for Sampling with his present organization, following a tour of military duty during the Korean War.

L. Wheaton Smith, Jr., Statistician and Operations Research Analyst, has joined the Computer Systems Division, The Ramo-Wooldridge Corporation.

Richard M. Snyder, formerly Associate Economist, E. I. duPont de Nemours & Co., Wilmington, Delaware, is now Visiting Professor in Economics at the University of Miami, Miami, Florida.

George J. Stolnitz is now Associate Professor, Department of Economics, Indiana University, Bloomington. His duties will include mainly teaching statistics to students in the Department and the Business School, on both the undergraduate and graduate level.

M. C. K. Tweedie, who has been on the faculty of the Virginia Polytechnic Institute for the past four years, has taken a position as Temporary Lecturer in Mathematical Statistics at the University of Manchester, England.

Sidney Weiner, previously with Aeronautical Radio, Inc., Washington, D. C., is now with Convair, Pomona, California, as Senior Dynamics Engineer.

Irwin Wolfstein has transferred from the Statistics Branch, Division of Program Analysis, Social Security Administration, to the Coverage and Disability Planning Branch as Assistant Chief.

Loring Wood, formerly Director of Statistics for the NATO International Staff in Paris, has joined the Statistical Research Division of the Bureau of the Census, where he will be in charge of work in the measurement and control of response errors.

Professor Rodolfo Benini, distinguished Italian statistician died recently. Professor Benini was born at Cremona, June 11, 1862. He taught history, political economy and statistics at Bari, Perugia and Pavia, and was Professor of Statistics at the University of Rome from 1907 to his retirement in 1929. He was an Honorary Member of the American Statistical Association and of the International Statistical Institute.

CHAPTER NOTES

Albany

The Albany Chapter, in conjunction with the New York State Department of Social Welfare and the U. S. Social Security Administration, sponsored a sampling clinic held in Albany on September 24-27. Sessions were held morning and afternoon covering the following topics: The Place of Sampling in Research; Probability, the Basis for Statistical Reasoning; Random Sampling and its Close Relatives; The Basis for Drawing Statistical Inferences; Problems and Potentialities in the Use of Permanent Samples; Sampling as a Basis for Decision Rather than Information; Cluster Sampling; and Getting the Most for the Sampling Dollar. The clinic was conducted by Dr. Walter M. Perkins, Statistical Techniques Specialist of the Social Security Administration.

The first regular meeting of the 1956-57 year was held on October 30. Dr. A. Ross Eckler, Deputy Director of the Bureau of the Census, addressed the chapter on "Planning the 1960 Census." The meeting was preceded by an informal dinner.

Austin

The Austin, Texas, Chapter held a discussion meeting at lunch in the Faculty Lunch Room of the University of Texas on Tuesday, October 23, with John Hargrave, President, presiding, and twenty-seven members present. Dr. Richard Henshaw, Jr., Associate Professor of Business Statistics, was elected President for the coming year, and Dr. Stella Traweek was re-elected Secretary. Mr. Tom H. Taylor, Superintendent of Information and Statistics, Texas Highway Department, was elected Vice-President. The Chapter decided to hold regular meetings on the second Tuesday in every other month, except when an out-of-town guest is the speaker, when the meeting will be a dinner meeting rather than the regular luncheon meeting. The Texas Research League group will present a special program on December 11, and other groups in the Chapter will be responsible for later meetings.

The Austin Student Chapter was reactivated on Wednesday night, October 31, at a dinner meeting in the private dining room of the Varsity Cafeteria. Dr. Stella Traweek, Secretary of the Austin city chapter, remains the sponsor. Dr. John R. Stockton spoke to the group on the work of Bureaus of Business Research. Mr. John V. Harrop (Captain in the Air Force, now a student in the College of Business Administration, majoring in statistics) was elected President. Mr. Harrop will provide a speaker and plans for the next meeting, when other officers and plans for future meetings will be selected.

Buffalo-Niagara

The opening meeting of the 1956-57 fiscal year was held on August 30. Dr. John Neter

of the School of Business Administration, University of Minnesota, spoke on "Statistical Sampling for Auditors and Accountants." Dr. Neter discussed three main areas of application of statistics: (1) The efficient collection of accounting data using sampling procedures rather than a complete census, (2) Control of the quality of clerical work and (3) Control of auditing costs and outcomes.

Dr. Neter stressed the importance of convincing management that sampling control methods are valid. He said that if the sample does not agree with census results, this does not necessarily mean that the sample is poor; the definition of the universe involved should be reviewed to determine the non-sampling errors. In fact, a major contribution of auditors and accountants in designing sampling plans is to define, in advance, what the universe is and what conclusions are to be drawn from the results. In order to use statistical procedures in this field, accountants and auditors must learn the importance of statistical inference, alternatives, and the risks involved in any given sampling plan.

Central Indiana

The chapter's first 1956-57 meeting was held at Purdue University. The speaker was Judah Rosenblatt of Purdue's Statistical Laboratory and Department of Mathematics, whose topic was, "Some Aspects of Goodness-of-fit Tests." The discussion centered around the solution to two problems met by Mr. Rosenblatt in an industrial situation. The first concerned the separation of the variance of test-problem generating equipment from the solutions-variance of an analogue computer. The second concerned the testing of the hypothesis that an empirical distribution function fits within some given band of theoretical distribution functions. The solutions were generalized to fit a very broad class of problems.

Central New Jersey

The speaker at the November 1 meeting was Roy Morgan, Director of the Australian Gallup Poll. Mr. Morgan, who has been a visitor to the United States during the 1948, 1952 and 1956 election periods, spoke on "Methods of the Australian Gallup Poll." He described the prediction of election results in Australia, where voting is compulsory.

Chicago

A joint luncheon meeting with the Chicago Chapter of the American Marketing Association was held October 2. Elmo Roper of Elmo Roper and Associates spoke on "Election Polling." Other luncheon meetings were held on October 18 and November 6. At the first of these Margaret G. Reid, Professor of Economics and Home Economics at the University of Chicago, discussed "Income Elasticity Demand for Housing"; at the second Dr. Peter Rosi,

Assistant Professor of Sociology at the University of Chicago, spoke on "Polls of Voters and Voters at the Polls."

The subject of the dinner meeting of October 23 was "Recent Industrial Changes in the United States and Illinois." The speaker was Maxwell Conklin, Chief of the Industry Division, Bureau of the Census. Mr. Conklin discussed regional and national trends in industry as revealed by the 1954 Census of Manufactures.

Cleveland

The subject of the first luncheon meeting for the 1956-57 season, held on September 25, was "Setting Up Problem For a Digital Computer." Mr. Frederick C. Way, Assistant Director of the Computing Center of Case Institute of Technology, presented Cleveland statisticians with a revealing and entertaining account of what electronic brains can do. Mr. Way described step by step the actual setting up and solving of a simple problem and a multiple correlation problem on the IBM 650 Digital Computer. After the talk, he took the Chapter members and guests to the Computing Center to show the "650" in actual operation and to demonstrate the high rate of speed at which complex problems could be solved.

The second meeting of the Cleveland Chapter was held on October 23, at which time Mr. D. Bruce Falkey, Director of the Cleveland Center on Alcoholics, addressed the group on the subject, "Some Statistical Aspects of the Alcoholic Problem."

Denver

The theme of the Chapter's 1956-57 program is to be "Statistics in the Professions." The plan is to hold dinner meetings and workshop meetings on alternate months. The first dinner meeting was held on November 1, with Mr. Otto P. Butterly, resident manager of the Denver office of Price Waterhouse and Co., speaking on "Statistics in Accounting." Subsequent dinner meetings will be devoted to statistics in medicine, astronomy, meteorology, and the earth sciences. Workshop meetings are planned on the application of matrices in statistics, techniques of displaying statistics, linear programming, and non-parametric methods in statistics.

Hawaii

At the August 16 meeting Dr. Michael T. Wermel of the California Institute of Technology spoke on "The Impact of Automation." Dr. Wermel reviewed the history of the industrial revolution and suggested changes likely to result from automation. He expects some occupations, especially skilled, semi-skilled, and machine operators to decline, while professions and services, as well as machine trouble-shooters, will increase. The end result after retraining and adjustment will be more leisure and a

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higher standard of living for people and a lower capitalization per unit of output for industry.

A dinner meeting was held on October 11. Dr. Frank S. Scott, Agricultural Economist at the Hawaii Agricultural Experiment Station of the University of Hawaii, spoke on "Use of Test Cities in Consumer Preference Studies."

New officers of the Hawaii Chapter are Frederick S. W. Loo, President, and Gordon Frazier, Secretary.

Montreal

On October 10th, the new season was opened with a meeting devoted to "A Discussion of the G. N. P. Forecast for the Year 1957." A panel of four speakers opened the meeting with talks on the following topics:

General review—R. McPherson, DuPont Company of Canada

Capital expenditure, bank credit, and money supply—E. A. Walton, Bank of Montreal

Consumer expenditure and credit—A. J. R. Smith, National Industrial Conference Board

Trade, capital movement and dollar outlook—D. I. W. Braide, Canadian Industries Ltd.

These talks were followed by questions, comments, and a lively discussion by those attending.

Philadelphia

Louis H. Bean, Economic Consultant, Washington, D.C., was the guest speaker at the October 10 meeting of the Philadelphia Chapter. He gave a very inter-

esting talk on the subject of "Predicting the 1956 Elections."

At the November 7th meeting Mrs. Mary K. Hawes of National Analysts Inc., was the speaker on the topic "Problems Encountered in Using Large Scale Electronic Computers for Data Processing Applications." Mrs. Hawes drew liberally on her six years' experience with various Univac installations in describing the nature of such problems as communication, collection and organization of data, development of routines, and programming in general.

The Philadelphia Chapter is attempting to bring its mailing list up to date. All ASA members in the Philadelphia area who are not currently receiving mail from the Chapter are requested to notify the secretary, John H. Norton, Statistics Department, Dietrich Hall, University of Pennsylvania, Philadelphia 4, Pa.

Pittsburgh

The following programs were presented by the Pittsburgh Chapter during the summer and early fall:

June—Alan Ross, University of Pittsburgh, "Concepts in Finite Universe Sampling"

July—Virgil Anderson, Purdue University, "Relationship of Analysis of Variance With Regression Model"

August—Oscar Kempthorne, Iowa State College, "Response Surface Exploration"

September—Irwin Miller, United States Steel, "Gaussian Stochastic Processes"

October—William Cooper, Carnegie Institute of Technology, "Constrained Regressions."

The newly-elected officers for the coming year are:

President—DR. DONOVAN THOMPSON, School of Public Health, University of Pittsburgh

Vice-President—DR. IRWIN MILLER, Applied Research Laboratory, United States Steel Corp.

Secretary—MR. HERBERT GINSBURG, Materials Engineering Department, Westinghouse Electric Corp.

Treasurer—DR. ROBERT HOOKE, Research Laboratories, Westinghouse Electric Corp.

Southern California

A dinner meeting was held on October 25, at which the speaker was Dr. Andrew Vazsonyi, head of the Management Sciences Department of the Computer Systems Division of the Ramo-Wooldridge Corporation. Dr. Vazsonyi's topic was "The Use of New Statistics in Modern Business Methods."

Washington

The initial meeting of the 1956-57 season was held jointly with the local chapters of the American Political Science Association and the American Association for Public Opinion Research on October 8. The topic was "The Place of Polls and Election Forecasts in Political Campaigns." The chairman was Stuart A. Rice, and the speakers were Floyd E. McCaffree, Research Director of the Republican National Committee, John Sharon, Administrative Assistant to Governor Stevenson, and Louis H. Bean, author of "How to Predict Elections." Carl F. Hawver, Public Relations Counsel, was a discussant.